

54. A method of forming a second borehole from a first borehole having casing along at least a portion of its length comprising the steps of:

under-reaming a portion of the first borehole;

running a joint assembly, when in a retracted position, through the casing in the first borehole and installing the assembly at the under-reamed portion of the first borehole, the joint assembly including a deformable wall;

deforming the deformable wall of the joint assembly outwardly into the under-reamed portion of the first borehole;

applying settable material into the under-reamed portion to support the deformable wall within the under-reamed portion; and

drilling a second borehole along a path defined by the joint assembly after the deformable wall is held in position by the settable material.

REMARKS

Reissue Applicant Michel Gondouin through his filing of a cover sheet, application papers, and a Preliminary Amendment is presenting in this continuation reissue application claims 8-54. The specification has been specifically amended to indicate that this is a continuation of Reissue Application Serial No. 08/961,457, which is presently pending before this Office. Applicant has also canceled claims 1-7, because these claims are pending in the parent reissue application. Accordingly, the status of all patent claims and claims added during the pendency of this reissue is that original claims 1-7 are canceled and claims 8-48 have been added and are pending.

LAW OFFICES

FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

Each of these claims is believed to be patentable and in condition for allowance, at least in part based upon the Examiner's decision and analysis presented in the Office Action of April 27, 1998, in the parent reissue application. As explained in more detail below, the pending claims are directed to subject matter of the type that the Examiner found to be allowable over the prior art. Thus, while the pending claims are not identical to the prior claims in the parent reissue application, Applicant believes that the pending independent claims either contain subject matter and limitations that led to the Examiner's indication of allowable subject matter or contain elements and limitations that patentably distinguish over the prior art.

In the Office Action of April 4, 1999, in parent application serial no. 08/861,457, the Examiner indicated that certain claims patentably distinguish over the prior art and would be allowable if placed in independent format including all of the limitations of the intervening claims. For example, the Examiner indicated that claim 61, which includes the step of under-reaming the subterranean formation to enlarge a wellbore, would be allowable if placed in independent form. In this reissue application, independent claim 8 includes the subject matter of independent parent claim 61, with the exception that claim 8 does not include the step of removing a part of the first tubular member (part of parent independent claim 58) and the limitations of intermediate dependent parent claim 60. Claims 9-11 depend from claim 8 and contain the subject matter of parent claims 62, 65, and 66, respectively. In addition, claims 12-15 depend from claim 8 and further define Applicant's invention.

Applicant's independent claims 17, 27, 35, 40, 50, and 54 also include the step of under-reaming the primary borehole, along with other steps to form an intersection between a primary borehole and a secondary borehole or form a secondary borehole from a primary borehole.

LAW OFFICES

FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

Claims 18-26, 28-34, 36-39, 41-49, and 51-53 depend from claims 17, 27, 35, 40, 50, and 54, respectively, and also further define Applicant's invention. Applicant believes that all of its claims are supported by Applicant's written description and are patentable over the prior art.

For instance, independent claim 8 is fully supported. Applicant discloses positioning a second tubular member in the wellbore and forming an opening in the wall of the second tubular member, wherein the opening may be formed either prior to or after positioning of the second tubular member in the wellbore as claimed in claim 8. *See, e.g.*, 8:49-53; 16:13-16, 53-60. Applicant further discloses forming a subsurface cavity external to the second tubular member in the subterranean formation wherein the step of forming comprises under-reaming the subterranean formation to enlarge the wellbore. *See, e.g.*, 8:57-62; 16:11-13. The first tubular member may be positioned to extend from the interior of the second tubular member, through the opening, and into the subsurface cavity. *See, e.g.*, 8:57-62; 16:17-31, 38-41. Settable material may be inserted into the subsurface cavity at the intersection between the first and second tubular members and allowed to set thereby sealing the intersection. *See, e.g.*, 8:57-62; 16: 23-28. Thus, independent claim 8 is fully supported.

Likewise, claims 9-16, which depend from claim 8, are also supported. Applicant discloses positioning a casing patch having a preformed opening in the wall thereof in the area of the enlarged wellbore as claimed in claim 9. *See, e.g.*, 8:49-53; 16:13-23. Applicant further discloses that the first tubular member may have an end shaped so as to cooperate with the inner edge of the opening as claimed in claim 10, including a flanged element larger than the opening and the flanged element may be positioned in contact with the inner surfaces of the second tubular member at the edge of the opening as claimed in claim 11. *See, e.g.*, 7:66; 8:1-12; 9:2-3,

8-10; 16:17-23. The flanged element may also be urged against the second tubular member as claimed in claim 12. *See, e.g.*, 8:57-62; 9:2-3, 8-10; 16:17-31.

Applicant further discloses that the diameter of the first tubular member is of sufficient diameter to allow the passage of well tools as claimed in claim 13. *See, e.g.*, 9:13-27; 16:49-52. Likewise Applicant discloses injecting a gas, including steam, into at least one of the first and second tubular members, to promote production of oil from the wellbore as claimed in claims 14 and 15. *See, e.g.*, 14:9-12, 26-31; 15:2-7. Further, Applicant discloses removing any material in the second tubular member to reopen the second tubular member to its full bore at the intersection of the first and second tubular members as claimed in claim 16. *See, e.g.*, 9:13-18; 16:41-44. Thus, claims 9-16 are also fully supported by Applicant's disclosure.

Independent claim 17 is likewise fully supported. Applicant discloses under-reaming a portion of the primary borehole at the location of the secondary borehole to be formed and installing joint assembly in the primary borehole at the location of the secondary borehole to be formed. *See, e.g.*, 8:47-53, 57-62; 16:11-16 Applicant further discloses forming an opening in the joint assembly at the location of the secondary borehole to be formed, wherein the opening may be formed either prior to or after the joint assembly is installed. *See, e.g.*, 8:49-53; 16:13-16, 53-60. A tubular member may be extended through the opening and into the under-reamed portion of the primary borehole and the secondary borehole may be drilled through the tubular member as claimed in claim 17. *See, e.g.*, 8:57-62; 9:13-18; 16:17-31. Thus, claim 17 is fully supported by Applicant's disclosure.

Claims 18-26, which depend from claim 16, are likewise fully supported. Applicant discloses applying settable material into the under-reamed portion of the primary borehole and

09871313.060404

about the joint assembly and the tubular member at the under-reamed portion as claimed in claim 18. *See, e.g.*, 8:57-62; 16:17-31. Applicant further discloses drilling the secondary borehole through the tubular member after the settable material has hardened as all claimed in claim 19. *See, e.g.*, 8:57-62; 9:13-18; 16:49-53.

Applicant also discloses that the joint assembly may have a preformed opening in the wall thereof as claimed in claim 20. *See, e.g.*, 8:49-53; 16:13-23. Applicant further discloses that the tubular member may have an end shaped so as to cooperate with the inner edge of the opening as claimed in claim 21, including a flanged element larger than the opening and the flanged element may be positioned in contact with the inner surfaces of the joint assembly at the edge of the opening as claimed in claim 22. *See, e.g.*, 7:66; 8:1-12; 9:2-3, 8-10; 16:17-23. The flanged element may also be urged against the joint assembly as claimed in claim 23. *See, e.g.*, 8:57-62; 9:2-3, 8-10; 16:17-31.

Applicant further discloses that the tubular member may have an inner diameter of sufficient diameter to allow the passage of well tools as claimed in claim 24. *See, e.g.*, 9:13-27; 16:49-52. Likewise, Applicant discloses injecting steam into at least one of the primary and secondary boreholes, to promote the production of oil from the wellbore as claimed in claim 25. *See, e.g.*, 14:9-12, 26-31; 15:2-7. Further, Applicant discloses removing any material in the joint assembly to open the joint assembly to its full bore at the intersection of the primary and secondary boreholes as claimed in claim 26. *See, e.g.*, 9:13-18; 16:41-44. Thus, claims 18-26 are also fully supported.

Similarly, independent claim 27 is supported. Applicant discloses removing a portion of the casing in primary borehole adjacent the location of the secondary borehole to be formed and

LAW OFFICES

FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

subsequently under-reaming the primary borehole at the removed portion of the casing. *See, e.g., 8:57-62; 16:11-13.* Applicant discloses that a joint assembly may be applied at the location of the secondary borehole to be formed, the joint assembly including a window formed either prior to or after the joint assembly is installed. *See, e.g., 8:49-53; 16:13-23.* Applicant further discloses that subsequently a tubular member may be extended through the window and into the under-reamed portion of the primary borehole. *See, e.g., 8:57-62; 16:17-31, 38-41.* The secondary borehole may be drilled through the window and tubular member. *See, e.g., 8:57-62; 9:13-18; 16:49-53.*

Claims 28-34, which depend from claim 27, are also supported. For instance, Applicant discloses applying settable material into the under-reamed portion and about the tubular member and the joint assembly proximate the tubular member as claimed in claim 28. *See, e.g., 8:57-62; 16:17-31; 38-41.* Applicant also discloses that the window in the joint assembly is preformed and positioned at the under-reamed portion of the primary borehole as claimed in claim 29. *See, e.g., 8:49-53; 16:13-23.* Applicant further discloses that the tubular member may have an end shaped so as to cooperate with the inner edge of the window as claimed in claim 30, including a flanged element larger than the window and the flanged element may be positioned in contact with the inner surface of the joint assembly at the edge of the window as claimed in claim 31. *See, e.g., 7:66; 8:1-12; 9:2-3, 8-10; 16:17-23.*

Applicant further discloses that the tubular member may have an inner diameter of sufficient diameter to allow the passage of well tools as claimed in claim 32. *See, e.g., 9:13-27; 16:49-52.* Likewise, Applicant discloses injecting steam into at least one of the primary and secondary boreholes, to promote production of oil from the wellbore as claimed in claim 33.

LAW OFFICES

FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

See, e.g., 14:9-12, 26-31; 15:2-7. Further, Applicant discloses removing any material in the joint assembly to reopen the joint assembly to its full bore at the intersection of the primary and secondary boreholes as claimed in claim 34. *See, e.g.*, 9:13-18; 16:41-44. Thus claims 28-34 are also fully supported by Applicant's disclosure.

Similarly, independent claim 35 is fully supported. Applicant discloses enlarging a section of the first well bore at the subterranean location where the second borehole is to be formed. *See, e.g.*, 8:57-62; 16:11-13. Applicant further discloses providing a joint assembly changeable from a first position wherein the joint assembly is in a retracted position and is of a size and shape to pass through the well bore, to a second position wherein at least a portion of the joint assembly expands and extends into the enlarged area of the well bore. *See, e.g.*, 8:49-67; 16:17-41. The joint assembly may be run through the well bore to the enlarged section of the well bore while maintaining the joint assembly in the first position, and the joint assembly may be expanded to the second position. *See, e.g.*, 8:49-67; 16:13-41. A second borehole may be drilled along a path defined by the joint assembly when in the second position. *See, e.g.*, 8:58-64; 9:13-18; 16:17-28, 49-52.

Applicant further discloses applying settable material into the enlarged section of the well bore and about the joint assembly as claimed in claim 36. *See, e.g.*, 8:57-62; 16:17-31; 38-41. In addition, as Applicant discloses, the first well bore may be cased, and the joint assembly may be of the size and shape that it will pass through the cased well bore, when in the first position as claimed in claim 37. *See, e.g.*, 8:47-49; 16:11-16. Applicant also discloses hanging the joint assembly from the casing above the enlarged section of the well bore as claimed in claim 38, *see,*

LAW OFFICES

FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

00971313.000404

e.g., Fig. 4; Fig. 10; 16:13-16, and installing liners through the joint assembly as claimed in claim 39, *see, e.g.*, 9:10-13, 19-22; 16:50-54. Thus, claims 36-39 are fully supported.

Claims 40-49 are likewise fully supported. For instance, Applicant discloses under-reaming a portion of the primary borehole at the location of the secondary borehole to be formed and installing an expandable bladder within the under-reamed portion of the primary borehole. *See, e.g.*, 8:57-62; 16:11-13, 17-28, 38-41. Further, Applicant discloses installing a guide member within the bladder at the location of the secondary borehole to be formed, *see, e.g.*, 16:17-28, and extending the bladder outwardly from the primary borehole and into the under-reamed portion as claimed in claim 40, *see, e.g.*, 16:20-28, 38-41. Applicant further discloses that the step of extending the bladder outwardly from the primary borehole may comprise applying a settable material into the bladder as claimed in claim 41, *see, e.g.*, 16:20-28, 38-41.

Applicant also discloses drilling the secondary borehole along a path defined by the guide member as claimed in claim 42. *See, e.g.*, 9:13-18; 16:17-23, 49-52. Applicant further discloses that the guide member may be a tubular member as claimed in claim 43. *See, e.g.*, 8:54-64; Figs. 4 and 10. In addition, Applicant discloses that the guide member and the bladder may each be part of a joint assembly run into the primary borehole, as claimed in claim 44 and that the guide member and the bladder may be run into the well in a retracted position and both subsequently extended into the under-reamed portion of the primary borehole as claimed in claim 45. *See, e.g.*, 16:17-31, 38-41.

Applicant further discloses that the joint assembly may include a casing joint and the bladder may be formed over the casing joint, as claimed in claim 46 and that the guide member, when in the retracted position, may be inside the casing joint, as claimed in claim 47. *See, e.g.*,

16:17-31. Moreover, Applicant disclosed that during the extending step the bladder at the under-reamed portion may extend outwardly beyond the outer diameter of the casing joint as claimed in claim 48. *See, e.g.*, 16:28-31, 38-41. Applicant also discloses that the during the applying a settable material step, settable material may be applied about at least a portion of the guide member, as claimed in claim 49. *See, e.g.*, 16:20-28, 38-41.

Independent claim 50, and the claims dependent therefrom, are also fully supported. For instance, Applicant discloses under-reaming a portion of the primary borehole at the location of the secondary borehole to be formed as claimed in claim 502. *See, e.g.*, 8:57-62; 16:11-13. Applicant further discloses installing an expandable bladder within the under-reamed portion of the primary borehole as also claimed in claim 50. *See, e.g.*, 16:17-28, 38-41. Applicant also discloses installing an expandable guide member within the bladder at the location of the secondary borehole to be formed, *see, e.g.*, 16:20-28, and extending the expandable guide member and the bladder into the under-reamed portion, *see, e.g.*, 16:23-41. Applicant further discloses applying a settable material into the bladder and about at least a portion of the liner to urge the bladder against the walls of the under-reamed portion of the primary borehole. *See, e.g.*, 16:20-23, 38-41.

Applicant further discloses drilling the secondary borehole along a path defined by the extended guide member, as claimed in claim 51. *See, e.g.*, 9:13-18; 16:17-23, 49-52. Applicant also discloses that the liner and the bladder are each part of a casing joint run into the primary borehole as claimed in claim 52, *see, e.g.*, 16:13-23, and that the liner and the bladder are run into the well in a retracted position and are subsequently extended into the under-reamed portion

LAW OFFICES

FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L. L. P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

of the primary borehole as claimed in claim 53, *see, e.g.*, 16:13-31; 38-41. Thus, claims 50-53 are fully supported.

Finally, Applicant's claim 54 is also fully supported. For instance, Applicant discloses under-reaming a portion of the first borehole. *See, e.g.* 16:11-13. Applicant further discloses running a joint assembly, when in a retracted position, through the casing in the first borehole and installing the assembly at the under-reamed portion of the first borehole, and discloses that the joint assembly may include a deformable wall. *See, e.g.*, 16:17-28. Applicant also discloses deforming the deformable wall of the joint assembly outwardly into the under-reamed portion of the first borehole and applying settable material into the under-reamed portion to support the deformable wall within the under-reamed portion. *See, e.g.*, 16:20-31, 38-41. A second borehole may be drilled along a path defined by the joint assembly after the deformable wall is held in position by the settable material, as all claimed in claim 54. *See, e.g.*, 16:38-44, 49-51.

Thus, all of the pending claims are fully supported by Applicant's disclosure.

Applicant is also presenting proposed amendments to Figs. 4 and 10. These proposed amendments were discussed during an interview with the Examiner in the parent application and were presented at the Examiner's request, set forth in an Office Action dated December 7, 2000, in the parent application. During the interview, Applicant and the Examiner discussed the original patent disclosure and drawings. These proposed drawing changes were attached to the Interview Summary dated February 7, 2001. As the Examiner acknowledged in the Interview Summary, the proposed changes to the drawings are supported by Applicant's disclosure. Applicant fully describes the operation of liner stubs (39) and the inner and outer guides (42) and (41). *See, e.g.*, 7:67; 8:1-11, 54-67; 9:1-19; 16:17-44; Fig. 3A.

LAW OFFICES

FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

09071613-000401

For instance, Applicant describes how the liner stubs are supported during run-in and guided during its outward expansion by inner guides and outer guides. *See, e.g.*, 8:62-64; 16:28-31. Applicant describes that the outer guide (41) is fixed to the casing and the inner guide (42) is mobile and slides within the fixed guide over only half of the stub (39) extension, while providing a cantilevered sliding internal support to the extended stub. *See, e.g.*, 8:64-67; 9:1; 16:28-31. Applicant also describes that the liner stub has drillable collar (35) and gasket (36), *see, e.g.*, 9:1-2; 16:17-23, 41-43, which he further describes in reference to Case 3 and shows in Fig. 3A. *See, e.g.*, Fig. 3A; 7:67; 8:1-11. Applicant explains that the liner stub and the collar are machined to conform with the window. *See, e.g.*, 9:8-10. This description, as well as other portions of Applicant's disclosure, fully supports Applicant's proposed drawing changes.

Applicant is formally submitting the proposed drawing changes in the accompanying Request for Approval of Drawing Change. These drawings are the same as the drawings considered and accepted by the Examiner in the parent case. Applicant submits that these proposed drawings fully comply with the Office's Rules and the MPEP.

The MPEP instructs that the "provisions of 37 CFR § 1.121(b)(3) govern the manner of making amendments to the drawings in a reissue application." MPEP § 1413. According to 37 CFR § 1.121, "[a]ny change to the patent drawings must be by way of a new sheet of drawings with the figures identified as 'amended.'" § 1.21(b)(3)(i). Section 1.121 further explains "where a change to the drawing is desired, a sketch in permanent ink showing proposed changes in red" must be filed. § 1.21(b)(3)(ii).

Applicant's proposed changes have been submitted on new sheets of drawings with Figs. 4 and 10 identified as "amended." Further, Applicant's submission constitutes a sketch in

LAW OFFICES

FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

permanent ink and the proposed changes have been shown in red. Thus, Applicant's proposed drawing changes fully comply with the Rules. Since these changes are fully supported by Applicant's disclosure as discussed above, Applicant respectfully requests approval of these changes. Upon receiving approval, Applicant will submit formal drawings.

Pursuant to the condition of the Decision of this office dated October 8, 1999, granting Applicant's petition for the original filing date in the parent application, Applicant has cancelled figures 3 and 6. The changes to these drawings have been made in accordance with the procedures set forth for reissue applications in Section 1413 of the MPEP. According to that section, the original drawings are enclosed within brackets (shown in red) and identified as "CANCELED" (again in red).

09974813-060401

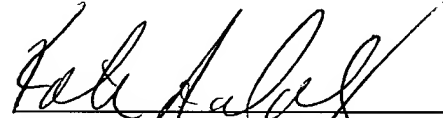
LAW OFFICES

FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

Each of the pending claims is believed to be patentable and in condition for allowance.

Applicant respectfully requests examination of this application and early allowance of a reissue application.

Respectfully submitted,



Richard L. Stroup, Reg. No. 28,476
Kathleen A. Daley, Reg. No. 36, 116
Finnegan, Henderson, Farabow,
Garrett & Dunner, L.L.P.
1300 I Street, N.W.
Washington, D.C. 20005
(202) 408-4000
Attorneys for Applicant

Date: June 4, 2001

CRUTSINGER & BOOTH
John F. Booth, Reg. No. 25,325
Tod E. Albanesi, Reg. No. 36,426
David L. Joers, Reg. No. 31,526
1601 Elm Street, Suite 1950
Dallas, Texas 75201-4711
(214) 220-0444
Attorneys for Applicant

202-408-4000

LAW OFFICES
FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000